

WHAT IS CLAIMED IS:

1. A process for producing 6'-O-carbamoyl tobramycin from a 6'-O-carbamoyl tobramycin producing microorganism, comprising the steps of:
 - a) preparing a fermentation broth containing the 6'-O-carbamoyl tobramycin producing microorganism;
 - b) regulating a constant level of assimilable carbon source and assimilable nitrogen source;
 - c) recovering the 6'-O-carbamoyl tobramycin.
2. The process of claim 1, wherein the 6'-O-carbamoyl tobramycin producing microorganism is *Streptomyces tenebrarius*.
3. The process of claim 1, wherein the assimilable carbon source is glucose.
4. The process of claim 3, wherein the glucose is regulated at a constant level in the range of about 0.001 to about 0.5%.
5. The process of claim 3, wherein the glucose is regulated at a constant level in the range of about 0.001 to about 0.4%.
6. The process of claim 3, wherein the glucose is regulated at a constant level in the range of about 0.001 to about 0.05%.
7. The process of claim 1, wherein the assimilable carbon source is glutamic acid.
8. The process of claim 1, wherein the assimilable carbon source is sodium glutamate.
9. The process of claims 7 or 8, wherein the assimilable carbon source is regulated at a constant level in the range of about 0.005 to about 0.1%.
10. The process of claims 7 or 8, wherein the assimilable carbon source is regulated at a constant level in the range of about 0.001 to about 0.1%.

11. The process of claim 1, wherein the assimilable nitrogen source is ammonia nitrogen.

12. The process of claim 11, wherein the ammonia nitrogen is selected from urea, ammonium sulfate, ammonium chloride, ammonium phosphate, ammonium nitrate and the mixtures thereof.

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13. The process of claim 11, wherein the ammonia nitrogen is ammonium sulfate.

14. The process of claim 11, wherein the ammonia nitrogen is regulated at a constant level in the range of about 0.03 to about 0.2%.

15. The process of claim 11, wherein the ammonia nitrogen is regulated at a constant level in the range of about 0.02 to about 0.2%.

16. The process of claim 1, wherein a constant level of assimilable carbon source and assimilable nitrogen source in the fermentation broth is regulated by continuously feeding of glucose, sodium glutamate and ammonium sulfate.

17. The process of claim 16, wherein the continuous feeding of glucose, sodium glutamate and ammonium sulfate occur independently of each other.

18. The process of claim 1, further comprising a continuously feeding of a mineral salt.

19. The process of claim 18, wherein the mineral salt is selected from the group consisting of calcium, magnesium, iron, zinc phosphate, manganese, sodium, potassium and cobalt.

20. The process as in claim 4, 5 or 6, wherein the glucose solution is adjusted of a pH between about 4.0 to about 5.0.

21. The process of claim 20, wherein the pH of the glucose solution is adjusted using an inorganic phosphate.

22. The process of claim 21, wherein the inorganic phosphate is phosphoric acid.
23. The process of claim 22, wherein the inorganic phosphate is fed during the fermentation in the quantity of about 0.001 to about 0.002% per day.

5 24. The process of claim 2, wherein the *Streptomyces tenebrarius* strain strain is NCAIM B(P) 000169.

25. The process of claim 2, wherein the *Streptomyces tenebrarius* strain is NCAIM B(P) 000204.

10 26. The process of claim 1, wherein the fermentation is a submerged culture.

27. The process of claim 1, wherein the fermentation is maintained at a temperature range of about 37 to about 41 °C.

28. 6'-O-carbamoyl tobramycin as produced in accordance with the process of claim 1.

20 29. A formulation useful in treating infectious disease in human comprising 6'-O-carbamoyl tobramycin produced in accordance with the process of claim 1.

536 30. A formulation useful in treating eye and ear infection in human comprising 6'-O-carbamoyl tobramycin produced in accordance with the process of claim 1.

25 31. The formulation as in claim 29 or 30, wherein the 6'-O-carbamoyl tobramycin produced in accordance with the process of claim 1 kills bacteria selected from the group consisting of *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Enterobacter aerogenes*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Morganella morganii*, *Haemophilus influenzae*, *Haemophilus aegyptius*, *Moraxella lacumata*, and *Acinetobacter calcoaceticus*.